# Weyerhaeuser Project Memorandum

**Date:** May 11, 2007



**To:** Michael Berkoff, USEPA RPM

**From:** Jennifer Hale, Weyerhaeuser Company
Kathy Huibregtse, RMT, Inc.

**cc:** John Gross, Weyerhaeuser Company
Jim Hutchens, RMT, Inc.
Linda Hicken, RMT, Inc.

**Subject: Geotechnical Investigation Data Quality Objectives and Work Scope**
Emergency Response Action, 12th Street Landfill (OU-4), Plainwell, Michigan

## Background

In 2001, the United States Environmental Protection Agency (USEPA) issued a Record of Decision (ROD) for the 6.5-acre 12th Street Landfill located in Otsego Township within Allegan County. The 2001 ROD included eleven major components[1], including relocation of residuals present in the powerhouse channel to the landfill and construction of an erosion control system protective of a 500-year flood event. In February 2007, the USEPA authorized a Time-Critical Removal Action (TCRA) to remove PCB-contaminated sediment in the former Plainwell Impoundment (a section of Operable Unit #5 of the Allied Paper/Portage Creek/Kalamazoo River Superfund Site). As part of the TCRA, the earthen section of the Plainwell Dam will be removed and the Kalamazoo River will be rerouted through the former powerhouse channel. The 12th Street Landfill abuts the river and is located directly downstream of the earthen section of the Plainwell Dam.

Rerouting of the Kalamazoo River will impact paper residuals currently present in the channel and will create different erosion and flood conditions along the 12th Street Landfill river bank. Weyerhaeuser Company (Weyerhaeuser) is planning to address these issues under Section XVII (Emergency Response) paragraph 67 of Weyerhaeuser's January 2005 Consent Decree with the USEPA. The impact of the rerouted river on the residuals and erosion protection requirements will be evaluated during an expedited design process being conducted by Weyerhaeuser. Geotechnical data is needed to evaluate certain subsurface conditions that are not well documented in the historical record. This site-specific information will then be used to evaluate slope stability issues as part of the design of the required erosion and flood control systems.

[1] USEPA Superfund Record of Decision, Allied Paper, Inc./Portage Creek/Kalamazoo River EPA ID: MID006007306 OU4 9/28/01 EPA/ROD/R05-01/521 2001.

In 1993, a test pit investigation confirmed historical aerial photographs that show a berm around sections of the perimeter of the landfill[2]. However, no design or construction information about this berm is available. Of particular importance is the need to avoid excavating through the berm (which provides stability for the fill material) during the emergency activities. Additional information about the extent, dimensions, and materials used in the berm is essential to complete a slope stability evaluation and ultimately design a stable slope along the river.

Weyerhaeuser has developed Data Quality Objectives (DQOs) and a Scope of Work to collect geotechnical information about the berm along the riverfront of the landfill in order to support the Emergency Response Action at the 12th Street Landfill.

## Geotechnical Investigation Data Quality Objectives

The purpose of the geotechnical investigation is to determine the extent, height and width, and materials used in the berm along the Kalamazoo River so that a slope stability evaluation can be completed. The location of the berm will be used to assess potential adverse affects to the stability of the fill material that may occur as a result of cutting back existing material along the riverfront. Visual observation of the materials used in the construction of the berm will be used to approximate the physical characteristics of the material, which will be used in the stability model. Together, the location and the physical characteristics of the berm will be used to model the stability of the landfill, provide data to help assess whether or not the vegetation present along the river can be preserved, and ultimately to provide inputs to the design of a stable final slope. A detailed discussion of each of the seven steps to support these DQOs is presented in Table 1.

## Geotechnical Investigation Work Scope

- Advance a series of Geoprobe® borings into the 12th Street Landfill at the six locations along the Kalamazoo River shown on Figure 1. The borings will be installed along transects that will be advanced inward from the riverfront. Approximately four borings will be installed along each transect. More borings may be installed as necessary to meet the DQOs. The borings will be advanced to approximately 5 feet into the native soil underlying the fill, or to refusal. Each borehole will be given a unique identification number, indicating the transect it was located along and its position on the transect. For each transect, the borehole numbers will increase with distance from the river.
- Prepare a Soil Boring Log for each borehole based on visual observation. Classify the materials encountered based on the procedures outlined in ASTM D-2488. The logs will document the borehole identification number, the drilling dates and times, names of field personnel, soil descriptions, sample depths, and recovery. Retain a representative sample of each type of material encountered (no laboratory analyses are planned unless uncertainty in soil conditions cannot be resolved based upon the multiple sample locations). As may be appropriate, photographs of the materials encountered or other pertinent observations will be documented. Photographs will be

[2] *Test Pit Investigation Technical Memorandum, 12th Street Landfill Operable Unit* (Geraghty and Miller, Inc., February 18, 1994).

labeled to indicate the subject, location, date, name of photographer, and project identification number.

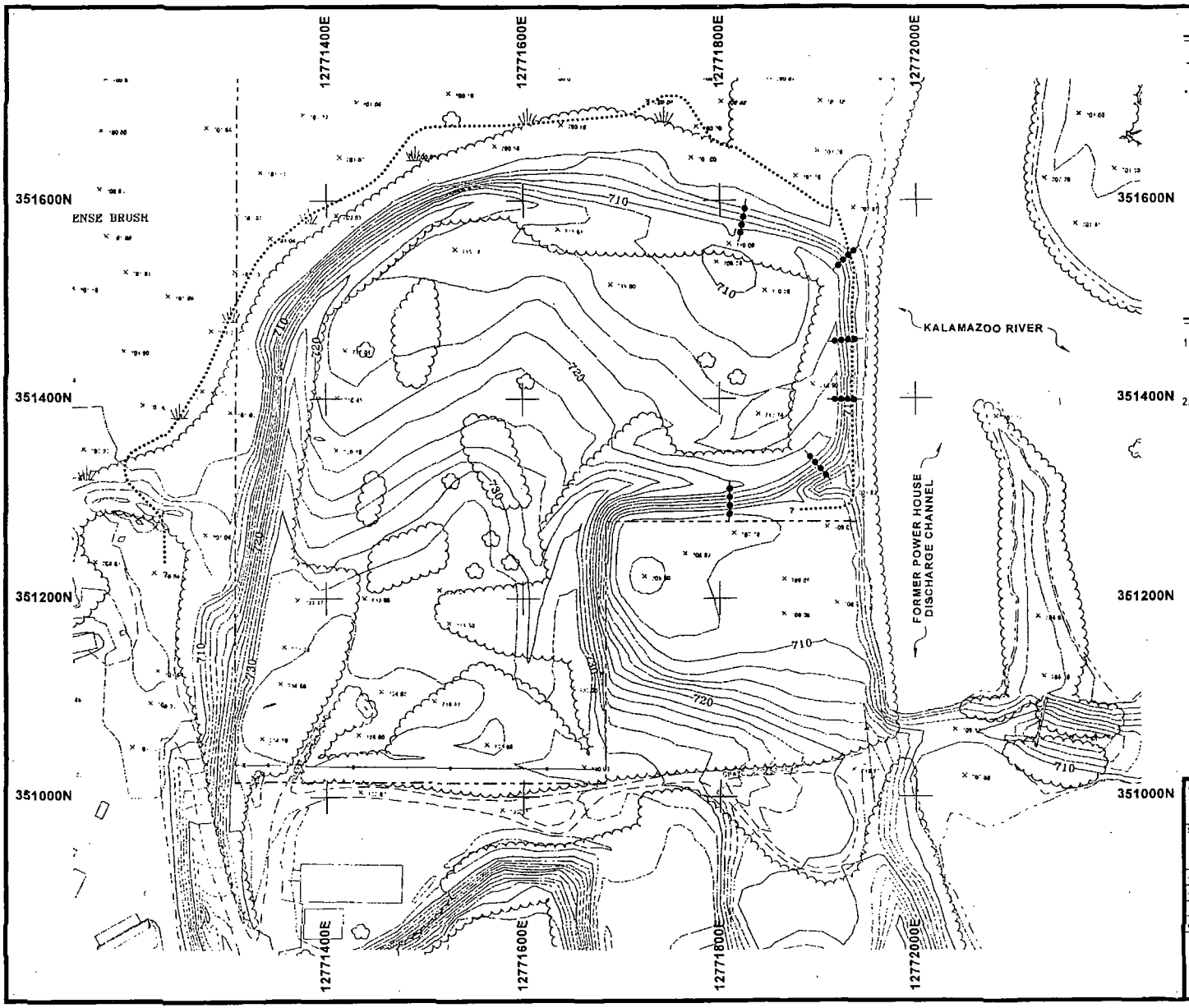
The on-site geologist or geological engineer will prepare the Soil Boring Logs in the field. The logs will be reviewed by the senior engineer in the office. A field notebook will also be maintained by the on-site geologist or geological engineer to document other pertinent field information. The senior engineer will review the field notebook for clarity and completeness in meeting the investigation objectives.

- Abandon the boreholes by filling them with bentonite grout following completion of the borehole logs.
- Decontaminate the drilling equipment following completion of the work. Decontamination of equipment between borings is not necessary. Decontamination will be performed at the site.
- Dispose Geoprobe® samples on-site. Decontamination water will be containerized in 55-gallon barrels that will be properly labeled and stored on site.
- Survey the locations and ground surface elevations of the boreholes following completion. The accuracy of the survey will be ± 0.01 foot for the horizontal coordinates and ± 0.1 foot for the vertical elevation. The survey locations will be added to the boring logs.

**Table 1**
**Geotechnical Investigation Data Quality Objectives**
**Question Summary**

| Major Steps | Questions to Consider | Site Information |
|---|---|---|
| Step 1: State the Problem | *Identify the members of the planning team and the primary decision-maker.* | The members of the planning team will include the Weyerhaeuser Project Manager, RMT project team, and drilling contractor. The primary decision-maker is the Weyerhaeuser Project Manager. Decisions must be acceptable to the USEPA RPM. |
| | *Develop a concise description of the problems.* | In 1993, a test pit investigation confirmed historical aerial photographs that show a berm around sections of the perimeter of the landfill. However, no design or construction information about this berm is available. |
| | *Specify available resources and relevant deadlines for the study.* | Information is needed as soon as possible to coordinate with the planned Time Critical Removal Action on the Former Plainwell Impoundment (TCRA). |
| Step 2: Identify the Decisions | *Identify the principal study questions.* | Where along the bank side of the 12th Street Landfill is the berm located and what are its dimensions? |
| | *Define alternative actions.* | Berm may not be observed so additional borings would be advanced. |
| | *Develop decision statement.* | Once berm is located through borings, add transect locations to define size and observe soil characteristics. |
| Step 3: Identify Inputs to the Decision | *Identify the information that will be required to resolve the decision statement.* | Subsurface soil samples collected from several locations where the berm is suspected. |
| | *Determine the sources for each item of the information identified.* | The 1993 test pit data provided basic description of berm problem derived from the TCRA and the need to assess eastern side of 12th Street landfill immediately. |
| | *Identify the information that is needed to establish the action level.* | Visual classification of soil types that are consistent with descriptions of the berm. |
| | *Confirm that appropriate measurement methods exist to provide the necessary data.* | Geoprobe borings with visual classification will be consistent with data needs. |

| Major Steps | Questions to Consider | Site Information |
|---|---|---|
| Step 4: Define the Boundaries of the Study | *Specify the characteristics that define the population of interest.* | Soil types, grain size color, and characteristics. |
| | *Define the spatial boundary of the decision statement.* | Eastern boundary of the landfill toward the Powerhouse channel. Samples will represent individual locations by distribution of samples supports decision making. |
| | *Define the temporal boundary of the decision statement.* | Design information needed immediately to support construction in 2007. |
| | *Define the scale of decision-making.* | Location of the berm provides information needed to define stable slopes, assess whether or not the trees along the river can be preseved, provide input into final erosion control system design. |
| | *Identify practical constraints on data collection.* | Practical constraints could include the access challenges on specific slopes, the presence of underground or overhead utility lines, debris piles, course fill material and adverse weather. |
| Step 6: Specify Tolerable Limits on Decision Errors | *Determine the possible range of the parameter of interest.* | Soil types identified in berm consistent with past descriptions or soil types identified provide stable slope conditions. |
| | *Identify the decision errors, and choose the null hypothesis.* | The baseline condition (null hypothesis) is that the berm is not present on site thus changing the stability analysis. |
| | *Specify the range of possible values of the parameters of interest where the consequences of decision errors are relatively minor.* | Soil conditions in a localized area are not accurately defined. Uncertainty could be addressed through geotechnical tests of samples if multiple nearby samples do not provide sufficient information. |
| | *Assign probability values to points above and below the action level that reflect the tolerable probability for the occurrence of decision errors.* | It is very unlikely that 24 continuous samples to 30 feet below grade will all result in misidentification of soil conditions after review by field geologists and checking of bagged samples by senior engineers. |
| Step 7: Optimize the Plan | *Review the DQO outputs and existing environmental data.* | Visual information from multiple soil samples will be combined with location information to assess the presence of the expected berm. |
| | *Develop the general data collection design.* | Data design is based upon multiple borings (four) along six transects that extend to the depth of natural soils on the eastern side of the filled area. |




## LEGEND

- APPROXIMATE PROPERTY BOUNDARY
- APPROXIMATE LIMITS OF RESIDUALS USING *VISUAL CRITERIA*
- PROPOSED GEOPROBE BORING TRANSECT

## NOTES

1. BASE TOPOGRAPHY PROVIDED BY OAS, INC. OF SEYMOUR, INDIANA BASED ON AERIAL SURVEY DATED 3/30/2005. COORDINATES ARE MICHIGAN STATE PLANE-SOUTH *ZONE. THE VERTICAL DATUM IS NGVD 29.*
2. PROPERTY BOUNDARY BASED ON LEGAL DESCRIPTION PROVIDED BY USEPA IN A FAX DATED MARCH 30, 2004. COORDINATES FOR S 1/4 CORNER AND N 1/4 CORNER OF SECTION 24 AND NORTH BEARING USED TO PLOT PROPERTY LINE WERE PROVIDED BY HOLLAND ENGINEERING AND ARE BASED ON MICHIGAN STATE PLANE - SOUTH ZONE COORDINATES.

| | |
|---|---|
| PROJECT: | WEYERHAEUSER COMPANY<br>12TH STREET LANDFILL<br>PLAINWELL, MICHIGAN |
| SHEET TITLE: | GEOTECHNICAL INVESTIGATION |
| DRAWN BY: stormerl | SCALE: 1"=200' |
| CHECKED BY: | PROJ. NO. 5117.04 |
| APPROVED BY: | FILE NO GEOTECH1.PLT |
| DATE: MAY 2007 | DATE PRINTED: |
| | FIGURE 1 |

RMT
744 Heartland Trail
Madison, WI 53717-1934
P.O. Box 8923 53708-8923
Phone: 608-831-4444
Fax: 608-831-3334

Plot Data
Design File(s) J:\05117\04\geotech1.dgn
stormerl Plot Date = Mon May 07 13:42:50 2007
Plot File = J:\05117\04\geotech1.prf
Pen Table = \\rmn-plot\aquarium\TBL\MSV8Default7000.tbl
Levels On = 1-63

Reference Files
Ref. File 1 = J:\05117\04\bmc033005.dgn
Ref. File 2 = J:\05117\04\bmmt.dgn
Ref. File 3 = J:\05117\04\proposed.dgn
Ref. File 4 = J:\05117\04\11x17bdr.dgn

Logical Names
(1) bmc
(2) bmmt
(3) pro
(4) bdr

Levels
(1) 27
(2) 1-63
(3) 1-63
(4) 1-63